

4565 RF 93

United States Government

Department of Energy

DUE  
DATE

# memorandum

OCT 15 3 07 PM '93 Rocky Flats Office

## ACTION

DIST. LTR ENC

BENEDETTI, R L		
BENJAMIN, A		
BERMAN, H S		
CARNIVAL, G J		
COPP, R D		
CORDOVA, R C		
DAVIS, J G		
FERRERA, D W		
FRANZ, W A		
HANNI, B J		
HEALY, T J		
HEDAH, T G	XX	
HILBIG, J G		
KIRBY, W A		
KUESTER, A W		
MANN, H P		
MARX, G E		
MCKENNA, F G		
MORGAN, R V		
PIZZUTO, V M		
POTTER, G L		
RILEY, J H		
SANDLIN, N B		
SATTERWHITE, D G		
SCHUBERT, A L		
SETLOCK, G H	XX	
SULLIVAN, M T		
SWANSON, E R		
WILKINSON, R B		
WILSON, J M		

CT 15 1993


EG&G  
ROCKY FLATS PLANT  
CORRESPONDENCE

EPD PMP 11669

Comments on the Environmental Assessment for Surface Water Structures Maintenance

G H Setlock, Director  
Environmental Protection Management  
EG&G Rocky Flats, Inc

Attached are the Rocky Flats Office comments on the subject environmental assessment (EA). We are also attaching a copy of the EA that has been line numbered for your easy reference to the comments. An electronic copy of the EA file has been placed in the file shared by the Ecology and NEPA Division and the NEPA Compliance Officer.

  
for Mark Van Der Puy  
Acting Director, Environmental  
Protection Division

## Attachments

cc  
G Hill, RFO  
P M Powell, RFO  
J Wegrzyn, RFO  
S M Nesta, EG&G  
S D Knopp, EG&G

CORRES CONTROL	x	x
PATS/T130G		

Reviewed for Addressee  
Corres Control RFP

10/15/93  
DATE BY

Ref Ltr #

DOE ORDER # 5440.1D  
5400.1

DOCUMENT CLASSIFICATION  
REVIEW WAIVER PER  
CLASSIFICATION OFFICE

## Surface Water Structures EA Comments

Line	Comment
17-19	New White House policy recently issued concerning wetlands deals with "artificial wetlands" Preliminary inquiries with USEPA Region 8 indicate that some form of one time mitigation for wetland habitats lost as a result of maintenance will likely be required Change the tone of the EA to reflect that wetlands removed will need to be mitigated with replacement wetland areas
24	Replace 'If uncontrolled' with 'Where uncontrolled'
30	Delete 'In addition,'
33	Delete 'Furthermore'
36-39	Delete this paragraph Not needed
51	Insert 'North Walnut Creek' in front of 'Runoff is controlled'
53	Insert 'South Walnut Creek' in front of 'Runoff is controlled'
57	Remove 'the least disturbed drainage' from this line
66	What is the reference to debris being removed around the structures? If this is trash, this activity is already CXed and the EA should not be talking about debris removal If this isn't trash, describe what is meant by debris
81-82	Quantify the amount of sediment and vegetation that would be removed
88-89	Quantify the volumes of material
89	Describe what is meant in this line by 'minor maintenance'
93	Describe what is meant by 'maintenance'
97	Describe the design requirements contained in the Order that we would meet
113	State the acreage of vegetation that would be removed
119	Clarify where the topsoil would be placed over the liner It sounds like it would be placed over the liner in the ditch
121	Insert 'five' before 'culverts'
132-133	Describe the RFP SOP requirements that apply
132-137	This paragraph should refer to the results of the sample analysis that has been done for the SID It should say what the results of analysis were, and what that means RFP will have to do to dispose of the sediments Has EPA has even agreed to allow RFP to remove sediments from the SID to another location?
139-143	Quantify the sediment and vegetation that would be removed annually Clarify what 'material' in line 139 means?
151-160	This information is all description of impacts that result from no action They should be moved to the impacts section
161-419	Subheadings in these sections should parallel each other For example, there is no discussion of soils in the impacts section (probably because there aren't any impacts to soils) therefore, there should not be a soils discussion in the affected environment section Similarly, if there are impacts to human health discussed in impacts, there should be a section under affected environment that describes what the human health environment currently is The description of impacts to water resource is not broken down by stream and pond name, but the water resources under affected environment are They should both be in the same format It seems that the wetlands and vegetation subsections should be combined There should not be a discussion of floodplains because floodplains are not impacted by this action There is no discussion of T&E species under impacts
245-252	This heading says wildlife, but the section only discusses mammals It should discuss all wildlife that could be impacted by the proposal

## Surface Water Structures EA Comments, continued

Line	Comment
266	Describe what is meant by 'harbors' or use other words such as 'provides habitat for' or 'provides foraging areas for'
266-274	The paragraph should name the state species of concern. The paragraph should address whether any of the species are likely to be found in the vicinity of the proposed action.
269-270	Delete the sentence that starts 'The riparian shrub lands' or else make similar statements about the rest of the species mentioned in the paragraph.
280	Insert 'Additional' in front of the last sentence.
285	Change this section to Vegetation and talk about both wetland and terrestrial vegetation.
305-311	Delete this paragraph. Since there are no impacts to floodplains, don't talk about them.
314-328	The point is not clear here. Are we saying that removing vegetation and sediment will increase flow through the ponds and improve water quality?
332-333	Do we mean soil and sediment? What is soil sediment?
335	Change to Vegetation and combine sections 5.2 and 5.3 which both talk exclusively about wetland vegetation.
338-340	Quantify the percentage of affected wetland or the acreage of affected wetland.
340	Delete 'In addition,' at the first of this sentence.
342-343	It seems likely that the removal of vegetation would increase stream flows and cause at least a minor increase in erosion.
362-363	End the last sentence after 'use by wildlife.'
365-383	These sections should acknowledge that because wetland vegetation has been allowed to accumulate in the drainage ditches at RFP, wildlife, including birds, have become dependent upon this habitat. It should also acknowledge that this wildlife will be displaced into other already inhabited areas where there will be increased competition for food and space, and some mortality could result.
369-371	If the proposal is to pile the SID sediments on the banks of the SID, wouldn't that impact the denning and recreational areas of mice and other bank inhabitants?
389-392	This information does not describe impacts. It should either be in the affected environment section or be deleted.
404	It would be better to state the level of contaminants than to characterize it as 'an acceptable level' since this could be a point of debate. It could also be stated as a level of contaminants within the state guideline of _____ ppm.
422	Delete 'floodplains' from this sentence.
425	Change the last sentence to 'There are no impacts to threatened or endangered species.' Groundwater was not discussed in the affected environment section and should not be mentioned here. If there are no impacts to soils, air quality and cultural resources, they should not be discussed in the EA or mentioned in the conclusions.
428-435	This information should be presented in the description of the proposed action rather than offered as mitigation since it is required by law.
436-442	This paragraph appears to be a part of the description of the affected environment or conclusions rather than mitigation. The parts need to be sorted out and moved to the appropriate section.

## Surface Water Structures EA Comments, continued

Line	Comment
none	Other alternatives should be analyzed in the EA to determine whether the stated objective of complying with the Clean Water Act can be achieved by some other method than the proposed action. Suggest considering other engineering alternatives such as 1) raising the ditch banks, 2) removing lesser amounts of wetland vegetation to reduce the risk of drainage problems while also reducing the impacts to wetlands and wildlife, 3) maintaining only the essential parts of the drainage system thereby lessening impacts to wetlands.
none	Propose one time mitigation for any permanent loss of wetland in all alternatives as a part of the alternative. Mitigation should be proposed in the same drainage as the original wetland if possible.
none	It would be beneficial to have a meeting of the RFO and EG&G people involved in the project and the EA to discuss the alternatives and possibilities.
none	There should be a figure that shows the locations of all proposed activities.
none	The text should describe or list the surface water structures to be affected.
none	The EA should present the cost of each alternative considered.

## EXECUTIVE SUMMARY

The Department of Energy needs to perform annual maintenance activities on surface water structures designed for surface water runoff control to comply with the Clean Water Act. The proposed action is to control and eliminate excessive vegetation and sedimentation in and around surface water control structures at RFP. The proposed action involves removal of wetland vegetation and sediments around surface water control structures such as dams, weirs, canals, ditches, gates, channels, flumes, and culverts.

The primary environmental issue is the impact to environmentally sensitive areas such as wetlands. However, the total wetland acreage impacted by the proposed action is less than 2.75 acres. The impacted wetlands did not exist prior to construction of Rocky Flats Plant, and the lack of annual routine maintenance activities has created these man-made wetlands. The proposed maintenance activities are required to enable ditches, channels, and culverts to carry and control surface waters as originally intended.

The results of the analysis indicate that there would be only minimal impact to water resources, wetlands and floodplains, vegetation, and wildlife at Rocky Flats Plant. Additionally, there would be no human health impacts as a result of the proposed action. Impacts to migratory birds would be avoided by scheduling the maintenance activities around their nesting seasons. Since the wetlands were not naturally created and exist solely because of lack of maintenance over a period of several years, there would be no mitigation of the impacted acreage.

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## 20 1.0 PURPOSE AND NEED FOR ACTION

21 The Department of Energy needs to perform annual maintenance activities on surface water  
22 structures designed for surface water runoff control to comply with the Clean Water Act. The  
23 proposed action is an effort to control and eliminate excessive vegetation and sedimentation in and  
24 around surface water control structures on plantsite. If uncontrolled, excessive vegetation and  
25 sedimentation would result in a reduction of the original flow capacities designed to control  
26 surface water runoff during a 25-year storm event. The minimum design flow capacities for  
27 structures at Rocky Flats Plant (RFP) are published in DOE Order 64.00 1A/D2, except for the  
28 South Interceptor Ditch (SID), which was designed and built for a 100-year storm event. The  
29 vegetation and sediment accumulation also results in inaccurate streamflow measurements required  
30 for environmental restoration and protection at RFP. In addition, inspection of dam structures for  
31 erosion, seepage, and sloughing is hampered by excessive vegetation growth. As a result, the  
32 potential exists for unsafe structural integrity of the dams and overflow or flooding conditions  
33 which may cause property damage at RFP. Furthermore, the proposed action would reduce the  
34 current investigative liability and associated costs which may be incurred by RFP in the event of an  
35 unanticipated overflow of contaminated water from the SID into Woman Creek.

36 This document is prepared pursuant to the National Environmental Policy Act (NEPA) of 1969 as  
37 implemented by regulations promulgated by the President's Council on Environmental Quality (40  
38 CFR 1500-1508), "National Environmental Policy Act Implementing Procedures and Guidelines"  
39 10 CFR 1021, and DOE Order 5440 1E.

## 40 2.0 BACKGROUND

41 Rocky Flats Plant is located in northern Jefferson County, approximately 16 miles northwest of  
42 Denver, Colorado. The cities of Boulder, Broomfield, Westminster, and Arvada are located within  
43 a 10-mile radius. RFP is located on federal land consisting of approximately 6,550 acres at an  
44 elevation of about 6,000 feet. Plant buildings are contained within a 384-acre secured Industrial  
45 Area (IA). Surrounding the security area is a Buffer Zone of approximately 6,150 acres. The  
46 entire site is situated on a plateau at the eastern edge of the foothills to the Rocky Mountains.

47 The site receives an average of 15 inches of precipitation each year in the form of rain or snow.  
48 Surface water drainage generally flows in a west to east direction along four ephemeral streams  
49 within RFP boundaries: North Walnut Creek, South Walnut Creek, Woman Creek, and Rock  
50 Creek (See Figure 1). North Walnut Creek receives surface water runoff from the northern portion  
51 of the RFP IA and from adjacent grounds within the drainage. Runoff is controlled through a  
52 series of four detention ponds and associated control structures (Ponds A-1 through A-4). South  
53 Walnut Creek receives surface water runoff from the central portion of the IA. Runoff is  
54 controlled through a series of five detention ponds and associated control structures (Ponds B-1  
55 through B-5). Woman Creek receives runoff from west of the RFP boundary and from the south  
56 Buffer Zone. Within this drainage is the South Interceptor Ditch which collects runoff from the  
57 southern portion of the IA. Rock Creek is the least disturbed drainage located in the northwest  
58 corner of the Buffer Zone and receives no runoff from the IA.

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## 3 0 DESCRIPTION OF ALTERNATIVES INCLUDING THE PROPOSED ACTION

### 3 1 Proposed Action

Rocky Flats Plant proposes to perform maintenance activities on surface water structures such as dams, spillways, gates, channels, flumes, culverts, weirs, and ditches at RFP. The maintenance activities would result in the excavation and removal of soils, sediment and vegetation within floodplains and in or near wetlands. This maintenance would control excessive growth of cattails, willows, and weeds. Additionally, debris would be removed in and around the structures. Minor repair activities such as replacement of culverts would be required to restore and maintain the original design flow or the structural integrity of the existing water structures. Figure 1 shows major surface water features at RFP.

#### 3.1.1 Minor Maintenance Activities

The proposed action would involve minor maintenance of existing surface water structures in or near floodplains and wetlands at RFP. The maintenance activities would include cutting or removal of vegetation, and removal of soil, rocks, or other debris which has accumulated in and around the flumes, drainage ditches, dams, weirs, culverts, and canals. Vegetation would be removed or cut as necessary to maintain the original design flow capacity of the structures. The action includes cleaning out blocked culverts to prevent backflow and flooding. If blockages cannot be removed, replacement of the culverts would be necessary. In addition, periodic maintenance of all dams and their structures such as spillways, toes, and bypass culverts would be necessary. Dams would require structural reinforcement by placing rip-rap on their upstream faces. The total volume of rip-rap planned for immediate placement is approximately 150 cubic yards. Spillways, toes, and bypass culverts would require the removal and clearing of minimal vegetation and accumulated sediment. Maintenance of dams and their related structures would involve the use of manual labor and heavy machinery.

Thirteen Parshall flumes exist at RFP which require the removal of sediment and vegetation. The accumulated material has impeded the flow of water through the structures and affected the accuracy of streamflow monitoring. Figure 2 shows the locations of the flumes at the stream gaging and water quality monitoring stations (GS) at RFP. Three flumes (GS03, GS12, and GS13) require the use of heavy machinery such as backhoes, dump trucks, and dozers to remove accumulated material. Flumes needing minor maintenance include GS01, GS02, GS05, GS06, GS07 within the Woman Creek drainage, GS03, GS08, GS09, GS11, GS12, GS13 within the Walnut Creek drainage, and GS04 within the Rock Creek drainage. In addition, five permanent National Pollutant Discharge Elimination System (NPDES) stormwater discharge stations (SW) would require maintenance (SW022, SW027, SW093, SW118, SW998). These stations are also shown in Figure 2.

Accumulated soil, rock, and other debris would also be removed from within and around the storm runoff structures such as ditches and culverts to maintain design requirements per DOE Order 6430 1A/D2. Methods of removal involve mechanical excavation using either a backhoe, tracked excavator, or hand excavation. The total volume of soil and vegetation to be removed from this action is approximately 200 cubic yards per year for 2 years. The volume would be subsequently reduced to an annual level of approximately 30 cubic yards. Excavated material would be disposed of in the RFP sanitary landfill.

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## 3.1.2 South Interceptor Ditch

The proposed action also includes maintenance activities on the 6,500 foot long SID which flows from west to east on the south side of the Buffer Zone into Pond C-2 (See Figure 3). The SID was constructed to collect potentially contaminated storm water runoff up to a 100-year storm event from the south side of the IA and divert it to Pond C-2. Moreover, the SID prevents contaminants from entering Woman Creek.

Maintenance activities for the SID would re-establish its original design flow capacity. This would be accomplished by removing accumulated vegetation and sediment from within the ditch, re-establishing ditch widths and bank slopes, replacing or cleaning approximately five plugged culverts, rebuilding or repairing roads as needed, repairing approximately ten eroded rip-rap drop structures, and installing 240 cubic yards of new rip-rap where required. Approximately 3,335 cubic yards of sediment and vegetation would be removed from the ditch channel using a large backhoe. In areas where the embankment has sloughed into the ditch, regrading and placing of rip-rap would be necessary for soil stabilization. In areas where the elevation of the southern (downstream) ditchbank is too low to provide proper function, soil may be placed and graded to raise the embankment to the proper elevation.

To prevent seepage, a hypalon liner may be placed within the ditch in selected locations. Approximately 1-2 feet of topsoil would be placed over the liner to help prevent erosion and stabilize the liner. The estimated maximum area of the liner material is 10,000 square feet.

The removal and replacement of culverts in the SID would involve excavation of surrounding soil, replacement of the culvert, backfilling, and regrading. For each culvert replacement, approximately 10 cubic yards of new rip-rap would be installed downstream of the structure. Additionally, new concrete headwalls would be installed at each culvert which would extend approximately 5 feet horizontally and 3 feet vertically beyond the culverts. Each headwall would be 8 inches thick. Roads over the culverts would also be regraded after replacement. The soil would be excavated using a large backhoe and excavated material would be spread or leveled using a small dozer. Excavated material from the ditch would be sent to the RFP sanitary landfill or deposited and leveled on the uphill side of the ditch, covered with 6 inches of topsoil, and seeded with native species to prevent soil movement towards Woman Creek. Straw bales may also be used to control sediment transport.

Activities located in or near an Individual Hazardous Substance Site (IHSS) would follow Rocky Flats Plant standard operating procedures for construction projects within an IHSS. Monitoring for the presence of radionuclides would occur and no material would be removed from the IHSS unless all requirements for such removals are met. Excavated material from structures other than the SID and not located in or near IHSSs would be hauled by truck to the existing RFP sanitary landfill. Figure 4 shows locations of IHSSs at RFP.

## 3.1.3 Preventive Maintenance Activities

Annual preventive maintenance actions would be taken to ensure that material would not accumulate within the surface water structures and impede the water flows. These activities would include periodic inspection of the structures for identification of potential problems, and the cutting or removing of vegetation and sediment within the drainages as necessary to maintain design requirements.

The majority of the maintenance activities described above would be performed during fiscal years 1994 and 1995 to maintain the original design flow capacities. The level of required annual maintenance would subsequently decline.



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## 3 2 No Action Alternative

The no action alternative is continued routine maintenance of surface water structures which has been categorically excluded per 10 CFR 1021 National Environmental Policy Act Implementing Procedures and Guidelines in areas where no wetland vegetation occurs. No other maintenance activities would take place in floodplain or wetland areas. However, the accumulation of soil sediment and the resulting vegetation in wetland areas would continue to expand, further constricting and blocking surface water flows.

The lack of maintenance activities at RFP would adversely affect streamflow measurement accuracy and continue to result in overflows and flooding which would potentially cause downstream property damage and increase soil erosion. No action would promote the expansion of current wetlands, create new wetland areas, and prohibit the structures from withstanding 25 and 100-year storm events. The resulting overflows and flooding would raise safety concerns about possible contamination entering the Woman Creek drainage. As a result, the no action alternative is unacceptable and this alternative was not carried forward for detailed analysis.

## 4 0 THE AFFECTED ENVIRONMENT

### 4.1 Soil

The surface soils at RFP are chiefly moderately deep, well-drained clay, cobbly clay, and sandy loams, with moderate to low permeability (USDA 1980). Bottomland soils are largely stratified loamy alluvium from the Haverson series. Soils of the terraces and the upper hillsides, where gravel and cobbles are common, are represented by combinations of Denver and Kutch series. These soils are sandy loam formed from Rocky Flats Alluvium. Lower hillsides and areas toward the eastern boundary of RFP have soils from the Standley, Nunn, and Valmont series (Scott 1965). The areas where soils and sediments will be disturbed by maintenance activities are previously disturbed soils derived from valley fill alluvium, and do not display characteristics of natural native soil. Further description of soils and their profiles at RFP may be obtained from a survey prepared for the U S Department of Agriculture (USDA 1980).

### 4 2 Water Resources

#### 4.2 1 Surface Water

Surface drainage generally occurs in a west to east direction along four ephemeral streams within Rocky Flats Plant boundaries: North Walnut Creek, South Walnut Creek, Woman Creek, and Rock Creek. In addition, a portion of the southeast corner of the plant site is a watershed tributary to Big Dry Creek.

Surface water runoff in North and South Walnut Creeks is collected in a series of detention ponds prior to offsite discharge into the Broomfield Diversion Ditch. Surface runoff from the southern portion of the Rocky Flats Plant IA is collected in the SID before it enters Pond C-2. The water from the SID enters Pond C-2, from which it currently is discharged through a pipeline into the Broomfield Diversion Ditch, which bypasses Great Western Reservoir.

#### North Walnut Creek

North Walnut Creek receives surface water runoff and some seepage water from the northern portion of the IA and from the adjacent grounds associated with the drainage. The drainage area

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187 encompasses approximately 371 acres (See Figure 1) Ponds A-1 and A-2 are isolated from North  
188 Walnut Creek at the A-1 bypass by valves that divert runoff through an underground pipe system  
189 to Pond A-3 Ponds A-1 and A-2 are maintained for emergency spill control for the northern  
190 portion of the IA Pond A-2 volume is maintained by using spray evaporation directed over the  
191 surface of the ponds Pond A-3 on North Walnut Creek is used to temporarily impound surface  
192 runoff to allow for analysis prior to NPDES permitted discharge to Pond A-4 and subsequent  
193 release offsite to the Broomfield Diversion Ditch Pond A-4 is the terminal pond located  
194 downstream of Pond A-3 and provides secondary monitoring and control during normal flow and  
195 flood conditions and water treatment if required

### 196 South Walnut Creek

197 South Walnut Creek receives surface water runoff and some seepage water from the central portion  
198 of the IA and from the adjacent grounds associated with the drainage The drainage area  
199 encompasses approximately 347 acres Under normal operations, Ponds B-1, B-2, and B-3 are  
200 isolated from South Walnut Creek at the B-1 bypass through an underground pipe system to Pond  
201 B-4 and then to Pond B-5 Ponds B-1 and B-2 are maintained to control and contain possible  
202 chemical spills from the South Walnut Creek drainage basin In the event of a spill emergency, the  
203 gate valves at the B-1 bypass have the capability of diverting South Walnut Creek flows to Pond  
204 B-1, and possible overflow to Pond B-2 The Waste Water Treatment Plant (WWTP, also known  
205 as the Sewage Treatment Plant) has bypass capabilities to Ponds B-1 and B-2 in the event of an  
206 upset or emergency, which is an exceptional incident causing temporary noncompliance with  
207 categorical Clean Water Act pretreatment standards The WWTP discharges treated sanitary  
208 effluent to Pond B-3 This water is subsequently discharged to Pond B-4 via the Pond B-3 outlet  
209 works The water is held in Pond B-5 until transferred to Pond A-4 for analysis prior to controlled  
210 discharge Pond B-4 is a controlled flow-through pond and all flow is conveyed to Pond B-5

### 211 Woman Creek

212 Woman Creek flows south of the IA The drainage area associated with the creek is approximately  
213 1,400 acres The three sources of flow into Woman Creek are precipitation and surface runoff,  
214 seepage from Antelope Springs and lesser seeps, and conveyance flows resulting from offsite  
215 water rights agreements These flows are from Kinear Ditch, Smart Ditch #1, and Smart Ditch #2  
216 Woman Creek flows across the south side of RFP through surface water monitoring Pond C-1,  
217 bypasses Pond C-2 through the Woman Creek Bypass Canal, and then flows offsite Surface  
218 runoff from the southern portion of the RFP IA is collected in the SID and routed to Pond C-2  
219 where the water is impounded and analyzed prior to offsite discharge The surface flow area  
220 associated with the SID is approximately 193 acres

### 221 Rock Creek

222 Rock Creek drains the north portion of the plant Buffer Zone and has been maintained in an  
223 essentially undisturbed condition There are no ponds or surface water structures on Rock Creek  
224 which are actively managed, except for one monitoring station (GS04) located where Rock Creek  
225 crosses the northern boundary (See Figure 2)

### 226 Upper Big Dry Creek

227 The Upper Big Dry Creek drainage basin extends eastward from the base of the foothills near the  
228 mouth of Coal Creek Canyon to Standley Lake Included is an area lying south of Coal Creek  
229 tributary to Spring Creek Site surveys of the basin of Spring Creek indicate that the area has  
230 historically been a tributary to Coal Creek and not to Upper Big Dry Creek Approximately 480  
231 acres of the Upper Big Dry Creek basin lie within the RFP Buffer Zone

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## 232 D-Series Ponds

233 Ponds D-1 and D-2 are off-channel reservoirs in the southeast portion of the Buffer Zone that are  
234 fed by Smart Ditch 1. They are not controlled or used for any water management functions at  
235 RFP.

## 236 4.3 Vegetation

237 Rocky Flats Plant has surface coverage comprised of fourteen vegetation cover types, two man-  
238 made unvegetated cover types, and open water as described in the baseline characterization  
239 (USDOE 1992). Classification of the vegetation cover types was made on the basis of community  
240 structure. These cover types include xeric mixed grassland, mesic mixed grassland, short  
241 grassland, reclaimed grassland, disturbed annual grass/forb, wet meadow, short marsh, tall marsh,  
242 tall upland shrubland, short upland shrubland, riparian shrubland, ponderosa pine savannah,  
243 riparian woodland, and tree plantings. The two man-made unvegetated cover types are  
244 disturbed/barren lands, and developed areas such as structures and roads.

## 245 4.4 Wildlife

246 Of the thirty-two mammal species documented at RFP during baseline characterization studies  
247 (USDOE 1992), small mammal species such as deer mice, meadow voles, and pocket mice are  
248 the most commonly observed in the wetland and riparian areas where the maintenance work will be  
249 performed. Mule deer and coyotes use these habitats, but being very mobile species, will move  
250 away from such areas during maintenance activities. Other carnivores observed in habitats similar  
251 to those of the proposed work areas are long-tailed weasels, raccoons, and skunks which forage in  
252 these areas. Medium-sized herbivores in these areas include desert cottontails and muskrats.

## 253 4.5 Migratory Birds

254 Nearly 150 species of birds including waterfowl, birds-of prey, game birds, and passerine birds  
255 have been recorded at RFP. As expected of such mobile species, no bird species are found  
256 exclusively in any watershed, but some species use certain habitats more frequently than others.  
257 Raptors and owls are common year round, but the species composition changes seasonally.  
258 Several species of hawks, as well as great horned owls, have been documented as nesting at RFP.  
259 Large cottonwood trees along the watercourses are used as nesting and roosting sites by raptors  
260 and owls. However, none of the large trees are expected to be removed during maintenance  
261 activities. The largest numbers of waterfowl and shorebirds have been recorded in or around the  
262 ponds of the Walnut Creek drainage, and in lesser numbers in the Woman Creek drainage. The  
263 open water of the impoundments attracts a variety of waterfowl and shore bird species during  
264 migration, and provides breeding habitat for some species as well.

## 265 4.6 Threatened and Endangered Species

266 RFP harbors several Colorado Species of Special Concern, but no species currently listed by the  
267 U.S. Fish and Wildlife Service as threatened or endangered (USFWS 1991). Preble's meadow  
268 jumping mice, a federal Category Two candidate species and a state species of concern, have been  
269 captured in the lower portions of all three RFP watersheds. The riparian shrublands and riparian  
270 woodlands have been identified as potential habitat for this species. Other federal candidate species  
271 that have been recorded regularly at RFP include ferruginous hawks and loggerhead shrikes.  
272 Peregrine falcons and bald eagles, both endangered, are also recorded from time to time within the  
273 RFP boundaries. Bald eagles are much more frequently observed, especially during winter, than  
274 are the falcons.

275 While the majority of the RFP riparian zones and several seep areas are considered potential

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habitat, and other areas have been identified as prime habitat for the Ute Ladies'-tresses orchid, a federally listed threatened species, no individuals of this species have been identified within RFP. Further, the areas to receive maintenance work are not considered to be good habitat for the species. Surveys performed in these areas have failed to produce documentation of the plant's presence (ESCO 1992). Surveys for Ute ladies'-tresses are scheduled to be performed during 1993 and 1994.

No lower Platte River impacts on threatened or endangered species in Nebraska are anticipated since no alteration of net streamflow from RFP is expected to occur as a result of the maintenance activities.

## 4.7 Wetlands and Floodplains

Figure 4 shows the wetlands found at RFP according to the Rocky Flats Plantsite Wetland Assessment (USDOE 1991a). Palustrine emergent wetlands are found in the riparian areas along streams in all drainages at RFP (Cowardin, et al 1979). Typical vegetation of palustrine emergent wetlands are cattails, rushes, sedges, bulrushes, and spike-rushes. Cottonwood trees are also found in some emergent wetlands. The extent of these wetlands varies with the topography and stream gradient, with the majority of riparian wetlands being located in lower gradient stream segments. Palustrine emergent wetlands are also found around the edges of most ponds.

Seeps exist in all three main drainages at RFP. According to Cowardin, et. al , 1979, the wetlands supported by these seeps are classified as palustrine flat wetlands. Vegetation of palustrine flat wetlands (seeps at RFP) is typically cattails, especially in areas that are semipermanently or permanently saturated, but there may also be significant numbers of bulrushes, rushes, and sedges. Some wetlands in the Rock Creek drainage are classified as riverine intermittent streambeds (USDOE 1991a). These wetlands generally are not vegetated, but they may be periodically populated by pioneering annuals or perennials during periods of low water flow.

A preliminary wetlands assessment of the Rocky Flats Plant (USDOE 1991a) identified 107 acres of wetlands as calculated from aerial photographs, and an additional 84,970 feet of linear wetlands along stream courses within the RFP. Open water areas of ponds were included as wetlands and comprised a large portion of the 107 acres mapped as wetlands.

The U S Army Corps of Engineers conducted a floodplain analysis of RFP (USACE 1992) to delineate the 100 year and 500 year floodplain boundaries. Maps showing the floodplain boundaries are included in the Corps of Engineers analysis. Floodplains are located in all major drainages, along the SID, along many of the irrigation ditches, and within the Industrial Area. Generally, the floodplains are narrower in the western part of RFP where stream gradients are higher, and wider in the eastern part of RFP where stream gradients are lower with flatter valley sideslopes.

## 5.0 ENVIRONMENTAL IMPACTS

### 5.1 Water Resources

Water quality in ponds at RFP is affected minimally by flow, the major disturbances are caused by wind and temperature. Water quality in lakes and reservoirs is often related to temperature and eutrophication. Eutrophication is an excessive amount of nutrients causing excessive vegetation and oxygen deficiency. While organic material, biological oxygen demand (BOD), and oxygen deficiency are important parameters of water quality, their effects are minimal compared to

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319 eutrophication and temperature changes

320 Control of excessive vegetation will, in the long run, help control sedimentation and will result in  
321 the return of the original flow capacities which were designed to control surface water runoff  
322 during a 25-year storm event and to enhance water quality

323 The cutting and removal of vegetation, and removal of soil, rocks, or other debris which has  
324 accumulated in and around the flumes, drainage ditches, dams, weirs, culverts, and canals will  
325 minimally affect water quality in the short term. This impact will result from disturbance of the soil  
326 and resulting sedimentation during the construction activity. The turbidity of the water in  
327 immediate proximity to maintenance activities will most likely increase. If a large storm event  
328 occurs during the repairs, increased soil and sediment transport will result

329 Rip-rap is used as channel fill material and dam face protection for erosion control at RFP. It is  
330 placed on pre-existing channels or dams for stabilization. The materials used in rip-rap are not  
331 anticipated to have any effect on water quality. In most cases at RFP, additional rip-rap will be  
332 placed over existing rip-rap. Rip-rap aids in the stabilization of the soil sediment, reducing the  
333 potential for soil sediment mixing. Water quality is not anticipated to be adversely affected at all in  
334 groundwater systems as a result of the proposed action

## 335 5 2 Wetlands and Floodplains

336 The cutting of vegetation and removal of sediment included in the proposed action should have  
337 only temporary impacts on wetlands. Where vegetation is cut, it is expected to regenerate within a  
338 short time. The area where vegetation and sediment removal is proposed does not constitute an  
339 appreciable percentage of the wetland habitat available in the general area, so the overall affected  
340 wetland habitat would be very small. In addition, the affected wetlands were not present prior to  
341 construction of RFP and exist only because of lack of maintenance over a period of several years.  
342 The proposed removal of vegetation is not expected to increase erosion rates, affect groundwater  
343 recharge, or impact other wetland functions

344 Most work areas are small, encompassing up to a few hundred square feet. The greatest wetland  
345 area impacted by removal of cattails will be the SID, which encompasses approximately 1.75  
346 acres. The total area of wetland vegetation impacted by the proposed action is less than 2.75  
347 acres

## 348 5 3 Vegetation

349 Wetland vegetation, riparian shrubland, and riparian woodland vegetation that will be affected by  
350 maintenance activities have established themselves due to human manipulation of the watercourses,  
351 or in the case of the SID, creation of a watercourse for runoff control purposes, and would not  
352 otherwise occupy these areas. Any impacts to these areas are not considered impacts to naturally  
353 occurring wetlands. Regular annual maintenance in these areas would have prevented or retarded  
354 the opportunity for these species to become established. Lack of annual maintenance is currently  
355 preventing proper function of the surface water structures

356 Wetland vegetation including rushes, sedges, cattails, and bulrushes will be removed during the  
357 maintenance operations on the SID, at dam toes, at flumes, and around culverts. Riparian  
358 woodland and shrubland areas occupied by leadplant, cottonwoods, and willows will also be  
359 altered to a minor extent by the maintenance in these areas. Wetland vegetation provides important  
360 habitat for muskrats, waterfowl, shore birds, amphibians, and some reptiles, but the areas of such  
361 habitat that will be disturbed through the maintenance activities in all areas except the SID are very

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362 minor Removing cattails and shrub willows from the SID will limit its use by wildlife, but  
363 suitable habitat exists nearby for use at Woman Creek

## 364 5 4 Wildlife

365 Small mammals that have dens in the work areas may be impacted during some types of  
366 maintenance construction where heavy equipment is required to accomplish the tasks In most  
367 work areas the total affected area is very small, and activities would result in the loss of very few  
368 animals and minimal habitat In the case of extensive SID cleanout and regrading, there is a  
369 potential loss of a few hundred mice and voles along the full length of the SID Impacts as a result  
370 of removal of cattails and sediment in the bottom of the SID will be less because the denning sites  
371 are located higher up on the ditch levees Five to ten muskrats and a similar number of cottontail  
372 rabbits may be displaced due to the removal of vegetation cover and den sites Available habitat  
373 outside the project area is expected to absorb these individuals

## 374 5 5 Migratory Birds

375 Wetland vegetation, most importantly cattails, provides breeding habitat for such species as red-  
376 winged blackbirds and common yellow throats Cattails will be removed during spillway  
377 maintenance, culvert cleanout, and ditch maintenance Up to fifteen nesting territories for red-  
378 winged blackbirds and three for common yellowthroats may be lost due to removal of the  
379 vegetation Actual destruction of nests and young would be prevented by either timing the cattail  
380 removal so it does not coincide with the nesting season or by inspecting for nesting activities prior  
381 to removals during breeding seasons Birds returning to the RFP vicinity the following breeding  
382 season may suffer a higher nesting density in other areas of similar habitats, with a subsequent  
383 reduction in nesting territory size

## 384 5.6 Human Health

385 The proposed action raises three human health concerns (1) what effect would it have on the  
386 quality of water leaving the RFP site, (2) What would be the likelihood of impact to the health of a  
387 family living on top of the dumped sediments next to the work site in some distant future, and (3)  
388 what would be the likelihood of health impact to a worker performing the proposed action

389 RFP has extensive programs for monitoring air and water quality in compliance with federal and  
390 state regulations Deviation from quality standards causes immediate investigation and remedial  
391 action Therefore, these programs provide health protection to plant workers and public alike  
392 Additional information is provided in the Rocky Flats Site Environmental Report (USDOE 1991b)

393 The risk analysis in the Appendix, which is based on the residence scenario, (USEPA 1989),  
394 represents a person growing up on the sediments from birth, never leaving the premises, and living  
395 his or her natural life there As a child, the person would ingest contaminants by eating dirt This  
396 person would continuously breathe contaminated dust naturally suspended in the air Under these  
397 unfavorable circumstances, the person would have a  $6.1 \times 10^{-6}$  (or 6.1 chances in one million)  
398 probability of contracting a cancer due to the proposed action There would also be a 0.064 hazard  
399 index for non-carcinogenic health effects The Environmental Protection Agency (EPA) describes  
400 the hazard index as a means to assess overall noncarcinogenic effects posed by more than one  
401 hazard (USEPA 1989) Noncarcinogenic health effects are adverse health effects other than  
402 cancer

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403 A worker performing maintenance activities described in the proposed action would be exposed to  
404 an acceptable level of contaminants in the air. The exposure period for the worker is typically 8  
405 hours per day for 290 days per year, which is much less than the residential exposure period which  
406 assumes 24 hours per day for 350 days per year. This approach results in a more conservative  
407 worker risk assessment than for the residential scenario. A conservative analysis is one which  
408 overestimates the human health impacts.  
409 Accordingly, the probability of a worker contracting cancer as a result of the proposed action is  
410 conservatively estimated as  $2.8 \times 10^{-6}$  (or 2.8 chances in one million).  
411 The above risk estimates are based on unvalidated laboratory data from the SID sediments. The  
412 purpose of the SID is to intercept possible surface contaminated runoff from the south side of the  
413 industrial area from entering Woman Creek. Because of the SID location and its function, the SID  
414 data are considered to represent a conservative estimate of contaminants at all locations of the  
415 proposed activity. It is postulated that the SID receives more contaminants than other surface water  
416 runoff structures at RFP, and is therefore, in relation to these other sites, the greater risk.  
417 Therefore, the human health risk assessment for the SID, being within allowable risk thresholds, is  
418 protective of human health because it is conservative for this site that is more contaminated than the  
419 others.

## 420 5.7 Conclusions

421 The above analyses indicate that as a result of the proposed action, there are minimal  
422 environmental impacts to vegetation, wildlife, wetlands, floodplains, and migratory birds. Water  
423 resources would also be minimally impacted, in the short term, by increased turbidity during  
424 excavation operations. Human health concerns are negligible and remain below the carcinogenic  
425 risk limit set by the Environmental Protection Agency. There are no impacts to groundwater,  
426 natural native soil, air quality, threatened and endangered species, or cultural resources.  
427

## 428 6.0 MITIGATION

429 A survey for the presence of nesting migratory birds in accordance with the Migratory Bird Treaty  
430 Act would be conducted within two weeks prior to any required maintenance activity within a  
431 wetland during breeding seasons. If nests are found, no activities related to the proposed action  
432 would be initiated. The scheduling of the proposed maintenance activities would coincide as much  
433 as possible with the absence of nesting migratory birds. The sites would be evaluated for the  
434 presence of threatened and endangered species and proper actions would be taken to minimize the  
435 impact on these species.

436 The affected environment directly impacted by the proposed action is human altered or artificial  
437 wetland acreage encompassing a maximum of 2.75 acres as described in Section 5.2. The wetland  
438 areas impacted are located within surface water control structures and exist solely because  
439 maintenance activities have not been implemented. Thus, these man-made wetlands would not  
440 normally exist and would not be mitigated. Future maintenance activities described under the  
441 proposed action would impact only minimal areas, since the accumulation of sediment and wetland  
442 vegetation growth would be minimized by this maintenance.